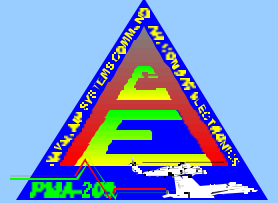# *CNS/ATM for Naval Aviation*

This is an informal newsletter for the Naval Aviation community produced by PMA-209. Information presented herein **does not represent any official U.S. Navy or DoD position.**

Volume 3, Issue 2, June 14, 2001

Purpose

This newsletter provides information to the Naval aviation community on civil initiatives in Communications, Navigation and Surveillance / Air Traffic Management (CNS/ATM).

SITREP

The basis for CNS/ATM is the intelligent implementation of data links. Decisions in the civil world regarding the selection of the data links that will be implemented obviously have an impact on Naval aviation. This newsletter will provide a situation report on the decisions.

Communications Data Link

A key element in the FAA's National Airspace System (NAS) architecture design is the transition to digital telecommunications. The FAA's plan was to design the next generation air ground communications system (NEXCOM) around the VHF Data Link Mode 3 (VDL-3) technology. Last year, the airlines and others within the industry requested that the decision be reopened. They suggested that a combination of 8.33 kHz channel spacing for voice and VHF Data Link Mode 2 (VDL-2) for data be substituted for VDL-3. The FAA Administrator chartered the NEXCOM Aviation Rulemaking Committee (NARC) to examine the alternatives and provide a recommendation by April 30, 2001.

Free to examine all alternatives, the NARC focused on continuing with VDL-3 or the 8.33 / VDL-2 combination. The NARC membership consisted of representatives from all aspects of the aviation community including DOD. It did not include FAA personnel except in an advisory role. They examined the technical and cost issues associated with the alternatives.

A briefing on the NARC recommendations was given in early May to senior FAA managers. The NARC report was formalized in late May. Public release of the NARC report is now expected in September.

Very credible sources indicate that the NARC recommended continuing with the development of VDL-3 with a validation demonstration of capabilities by 2004. The NARC also recommended that low level efforts regarding 8.33 kHz channel spacing continue as a fall back position.

NARC recommendations included continued management of available spectrum to prolong the existing system. The NARC recommended that it continue through the end of the fiscal year to complete some report appendices. Finally, the NARC recommended that it be reconvened to review the data and analysis from the validation demonstration.

The Navy's viewpoint on this issue may differ from the other services. Existing systems, such as 8.33 / VDL-2, are technology limited. VDL-3 Time Division Multiple Access technology will give the Navy the ability to digitally data link simultaneously with up to four aircraft and provides digitized voice. This supports our Network Centric Warfare initiative, and DOD's initiative toward the Joint Tactical Radio System.

Surveillance Data Link

As discussed in the last newsletter, the selection process for an Automatic Dependent Surveillance – Broadcast (ADS-B) data link continues. Three candidate data links – Mode S with Downlink of Aircraft Parameters, or Universal Access Transceiver, or VHF Data Link Mode 4 – are being evaluated.

The Technical Link Assessment Team (TLAT) finished its report. Along with data link subject matter experts, the TLAT team consisted of both U.S. and European evaluators. The performance of each of the links was analyzed in each of three scenarios – the traffic in the Los Angeles basin in 2020, the traffic in the core of Europe in 2015, and a "low density" scenario that represented most of CONUS. The links were judged against various performance criteria either by simulation models or by analysis. Due to time constraints, some performance criteria were not addressed.

The results indicate that none of the links meets every performance criteria. Each candidate link demonstrated various strengths and deficiencies. The TLAT report is available at www.faa.gov/safeflight21/ with additional details.

Based upon the TLAT report, the FAA and Europe have chosen different paths. By fall 2001, the FAA expects to complete its analysis process and make a decision. Europe intends to conduct further technical analysis, which delays their decision until next year.

The next step for the FAA is an investment analysis. Because none of the candidate links was clearly superior, the investment analysis becomes complicated. Each of the candidate links, as well as various combinations of links, will be evaluated from a benefit to cost ratio standpoint.

In order to use realistic cost information in the analysis, the FAA requested that potential users provide cost data on implementing the various links. As part of a joint service approach, the Navy's data will be combined with the other services and provided as a DOD cost-to-implement along with the assumptions made as part of the DOD input.

In addition to the TLAT and the investment analysis, the FAA is compiling data on "management considerations. This will aid the FAA Administrator in making the decision. These considerations include the availability of industry standards defining the links. In addition, the worldwide availability of spectrum for each of the links and operational safety assessments will be considered.

DOD's forwarded a position paper recommending that the FAA choose only one of the links and avoid selecting multiple links for implementation. The position paper identified a preference for Mode S.

The FAA evaluators appear to be leaning toward a multi link solution. A scenario being investigated by the FAA is implementing different links in adjacent sectors. The FAA is also considering implementing different links at different altitudes.

CNS/ATM NEWS

8.33 kHz Channel Spacing Revisited

The last newsletter noted that various European nations intended to implement 8.33 kHz channel spacing on various dates. Since then, the nations have "harmonized" the implementation date. Note that France has dropped plans to lower the flight level to FL195.

8.33 kHz Requirements (Europe only)		
Location	Flight Levels	When

Location	Flight Levels	When
Austria (west of 12E), Belgium, France, Germany, Luxembourg, the Netherlands, Switzerland	Above FL245	7 October, 1999
Austria (East of 12E)	Above FL340	7 October, 1999
Bosnia & Herzegovina, Croatia, Czech Republic, Denmark, Estonia, Finland, Hungary, Ireland, Italy, Latvia, Lithuania, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, UK, Yugoslavia	Above FL245	31 October, 2002
Bulgaria	Above FL245	After 2005
Nations listed above	Ground & above	2008 ?

A slide from EUROCONTROL graphically presents the implementation plan.
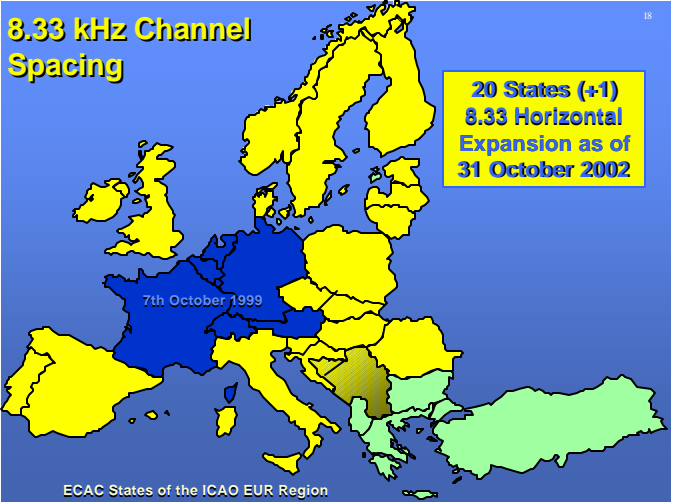
NATO has agreed that military aircraft flying more than 30 hours per year in Europe will be 8.33 kHz equipped. Aircraft that fly less than 30 hours per year may use UHF to contact civil Air Traffic Control (ATC). Note that civil ATCs in Finland, Hungary, Ireland, Latvia, Norway, Poland, Slovenia, and Yugoslavia are typically not UHF equipped.

Special Offer

For a limited time, the CNS/ATM IPT is offering a special briefing to groups of four or more. This briefing covers what your Navy platform will need to be CNS/ATM compliant. Just redeem the coupon below.
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